

SERVICE MANUAL

RADIO CASSETTE RECEIVER

• BASIC TAPE MECHANISM : TN-9ZR-215

SPECIFICATIONS

HR, HA MODEL

Tuner section

Frequency range, antenna — FM: 87.5 - 108.0 MHz
 Rod antenna, AM: 530 - 1,605 kHz Ferrite bar antenna

Deck section

Track format — 2 tracks, 1 channel / Frequency range
 — Normal tape: 50 - 8,000 Hz (EIAJ) / Recording
 system — AC bias / Erasing system — Magnet erase /
 Heads — Recording/playback head (1), Erasure head
 (1)

General

Speaker — 58 mm cone type (1) / Output — Earphone
 jack (monaural mini-jack) / Power output — 0.5 W (EIAJ
 8 ohms, T.H.D. 10%), 0.3 W (DIN 1% Rated Power) /
 Power requirements — DC 6 V using four size AA
 (R6P) batteries, Domestic AC power using the supplied
 AC adaptor / Dimensions — 206 (W) x 91.6 (H) x 55 (D)
 mm (excluding projecting parts and controls) / Weight
 — 450 g (excluding batteries) / Accessories — AC
 adaptor (1)

AC adaptor

<AC-D602 K>
 Rated input — AC 230 V, 50 Hz
 Rated output — DC 6 V, 500 mA

<AC-D602 H>

Rated input — AC 110 - 120 V / 220 - 240 V, 50/60 Hz
 Rated output — DC 6 V, 500 mA

• Design and specifications are subject to
 change without notice.

This Service Manual is the "Revision Publishing" and replaces "Simple Manual"
 RM-P300 AEZ(S), AHKJ(S), AHA(S), AHRJ(S)(S/M Code No. 09-003-340-6T2).

aiwa
 S/M Code No. 09-003-340-6R2

REVISION
 DATA

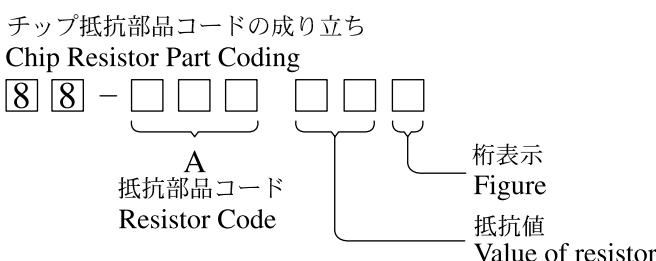
ELECTRICAL MAIN PARTS LIST

DESCRIPTIONで判断できない物は"REFERENCE NAME LIST"を参照してください。
If can't understand for Description please kinly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
IC				C232	87-A10-164-010	CAP,CER 100P-50 K SL	
8Z-CM2-646-010	IC,TA2132			C233	87-A10-168-010	CAP,CER 220P-50 K B	
88-CM2-608-010	IC,TA7628 HP			C301	87-A10-168-010	CAP,CER 220P-50 K B	
88-CS7-613-010	IC,KA2402			C302	87-A10-173-010	CAP,CER 560P-50 K B	
				C303	87-010-402-080	CAP, ELECT 2.2-50V	
TRANSISTOR				C304	87-010-263-080	CAP, ELECT 100-10V	
87-CD7-603-080	TR,SS8050			C305	87-010-248-080	CAP, ELECT 220-10V	
				C306	87-010-380-080	CAP, ELECT 47-16V	
				C308	87-010-221-080	CAP, ELECT 470-10V	
				C309	87-010-248-080	CAP, ELECT 220-10V	
DIODE				C310	87-010-221-080	CAP, ELECT 470-10V	
87-070-345-080	DIODE,IN4148			C311	87-010-263-080	CAP, ELECT 100-10V	
87-A40-574-080	ZENER,MTZJ3.0A			C312	87-010-380-080	CAP, ELECT 47-16V	
88-CD6-665-010	DIODE,IN60P			C313	87-010-401-080	CAP, ELECT 1-50V	
86-CM3-601-080	DIODE,CDG-24			C314	87-A10-578-080	CAP,CER 0.047-50 Z YF	
87-A40-375-010	ZENER,HZ5BLL			C315	87-010-400-080	CAP, ELECT 0.47-50V	
87-A40-398-010	DIODE,1N4001			C322	87-A10-128-010	CAP,CER 2P-50 K CH	
				C323	87-010-196-080	CHIP CAPACITOR, 0.1-25	
				C324	87-A10-164-010	CAP,CER 100P-50 K SL	
				CF201	88-CS8-631-010	FILTER, SFE10.7MS2-A	
MAIN C.B				CF202	87-008-582-010	FLTR, SFU455B	
C101	87-010-404-080	CAP, ELECT 4.7-50V		CF203	88-CS8-631-010	FILTER, SFE10.7MS2-A	
C102	87-010-374-080	CAP, ELECT 47-10V		D302	88-CS8-644-010	LED,SE-3001DT,3MM BRIGHT ,REDL	
C104	87-010-405-080	CAP, ELECT 10-50V		J1	88-CS7-618-010	JACK,DC 6	
C107	87-A10-578-080	CAP,CER 0.047-50 Z YF		J2	88-CL5-608-010	JACK,3.6 S W/SW	
C109	87-010-248-080	CAP, ELECT 220-10V		L201	88-CS8-610-010	COIL,BAR ANTCOIL ASSY A192674W	
C114	87-A10-173-010	CAP,CER 560P-50 K B		L202	8Z-CM3-611-010	COIL,FM RF 6.5T-2.5 DIA 0.5	
C115	87-010-405-080	CAP, ELECT 10-50V		L203	8Z-CM3-612-010	COIL,FM OSC 2.5T-5 DIA 0.8	
C116	87-010-404-080	CAP, ELECT 4.7-50V		L204	88-CS8-611-010	COIL,FM ANT 4.5-4T	
C117	87-010-401-080	CAP, ELECT 1-50V		L205	88-CS8-630-010	COIL,FM 9T,3MM,DIA:0.4MM CS34-	
C118	87-010-382-080	CAP, ELECT 22-25V		L206	87-005-151-080	COIL,2.2UH	
C119	87-010-374-080	CAP, ELECT 47-10V		PVC1	87-A90-913-010	TUN-CAP,20P-140P 16*16	
C122	87-A10-173-010	CAP,CER 560P-50 K B		SW2	88-CM2-604-010	SW,2P-6T (R/P)	
C123	87-A10-173-010	CAP,CER 560P-50 K B		T201	8Z-CM3-610-010	COIL,FM IFT-1411	
C124	87-A10-164-010	CAP,CER 100P-50 K SL		T202	8Z-CM3-613-010	COIL,AM OSC1497	
C204	87-A10-496-010	CAP,CER 18P-50 J CH		T202	88-CM2-601-010	COIL,FM DET1529	
C205	87-010-316-080	C-CAP,S 22P-50V		T306	88-CS8-628-010	COIL,OSC IFT 4A-363R(B) 10MM	
C206	87-A10-134-010	CAP,CER 8P-50 K CH		VR301	8Z-CM1-603-010	VR,RTRY 50K A MAIN	
C207	87-010-498-040	CAP,E 10-16 GAS		VR302	87-A90-309-010	SFR,2K H 6.3	
C208	87-A10-414-010	CAP,CER 0.033-16 K SR					
C210	87-010-400-080	CAP, ELECT 0.47-50V					
C211	87-A10-496-010	CAP,CER 18P-50 J CH					
C212	87-010-551-040	CAP, ELECT 33-10 GAS					
C213	87-A10-414-010	CAP,CER 0.033-16 K SR					
C226	87-010-401-080	CAP, ELECT 1-50V					
C231	87-010-248-080	CAP, ELECT 220-10V					

- Regarding connectors, they are not stocked as they are not the initial order items.
The connectors are available after they are supplied from connector manufacturers upon the order is received.

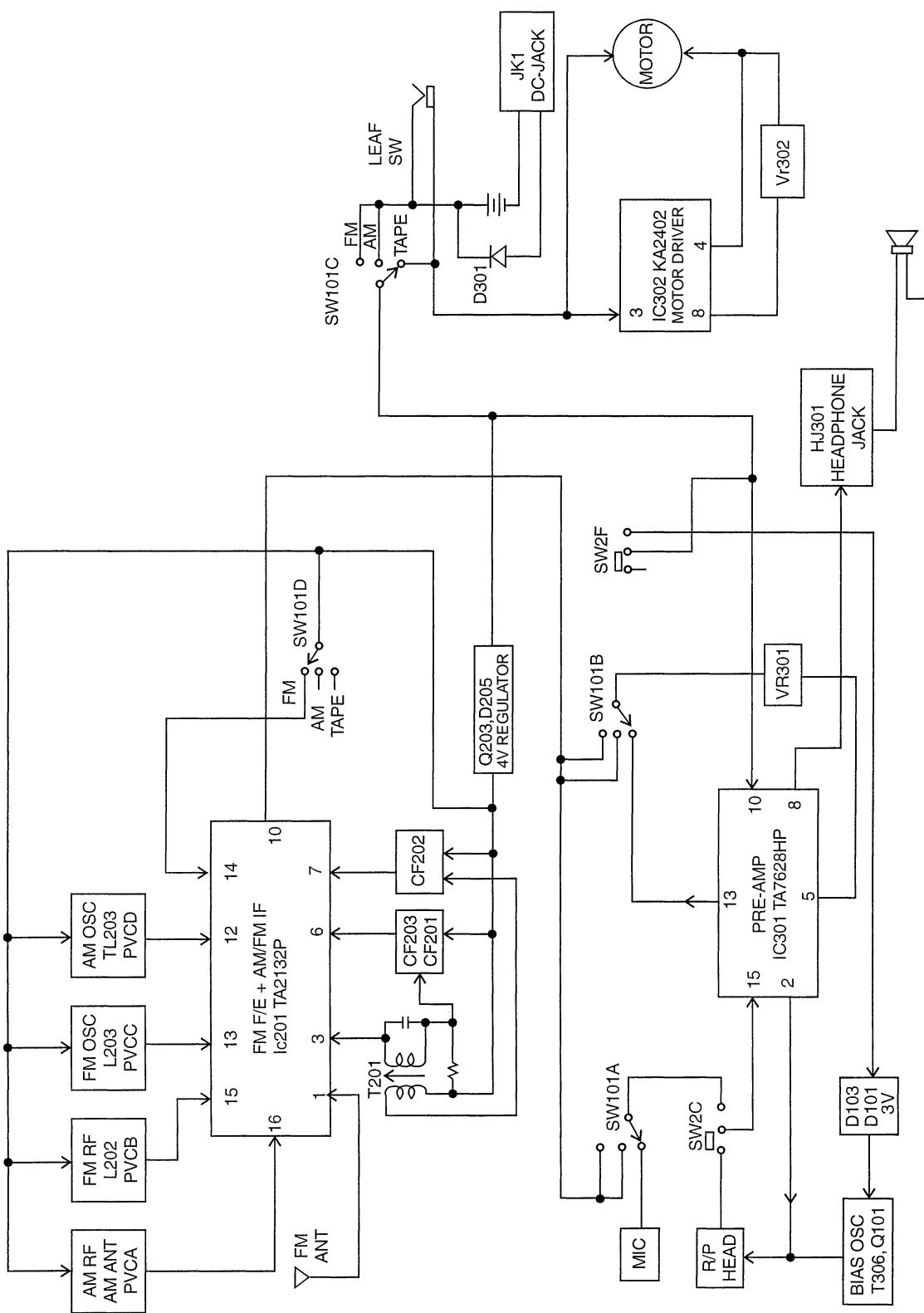
○チップ抵抗部品コード/CHIP RESISTOR PART CODE



チップ抵抗
Chip resistor

容量 Wattage	種類 Type	許容誤差 Tolerance	記号 Symbol	寸法/Dimensions (mm)			抵抗コード Resistor Code : A
				外形/Form	L	W	
1/16W	1005	± 5%	CJ		1.0	0.5	0.35
1/16W	1608	± 5%	CJ		1.6	0.8	0.45
1/10W	2125	± 5%	CJ		2	1.25	0.45
1/8W	3216	± 5%	CJ		3.2	1.6	0.55

BLOCK DIAGRAM



VOLTAGE CHART

TUNER SECTION TEST CONDITION: SET TUNER ON AM/FM ONE FREQUENCY IC201 (TA2132AP)

PIN'S NUMBER	1	2	3	4	5	6	7	8
AM	0	0	2.99	0.43	2.99	2.99	2.30	0
FM	0.77	0	2.97	1.50	2.97	2.98	2.79	0
PIN'S NUMBER	9	10	11	12	13	14	15	16
AM	2.74	1.09	1.06	2.99	2.99	2.33	2.99	2.99
FM	2.18	0.84	1.13	2.98	2.97	2.33	2.97	2.98

TRANSISTOR	Q203 (8050)		
	E	C	B
FM	0.09	2.07	0.83

CASSETTE SECTION TEST CONDITION: TAPE PLAY IC301 (TA7628HP)

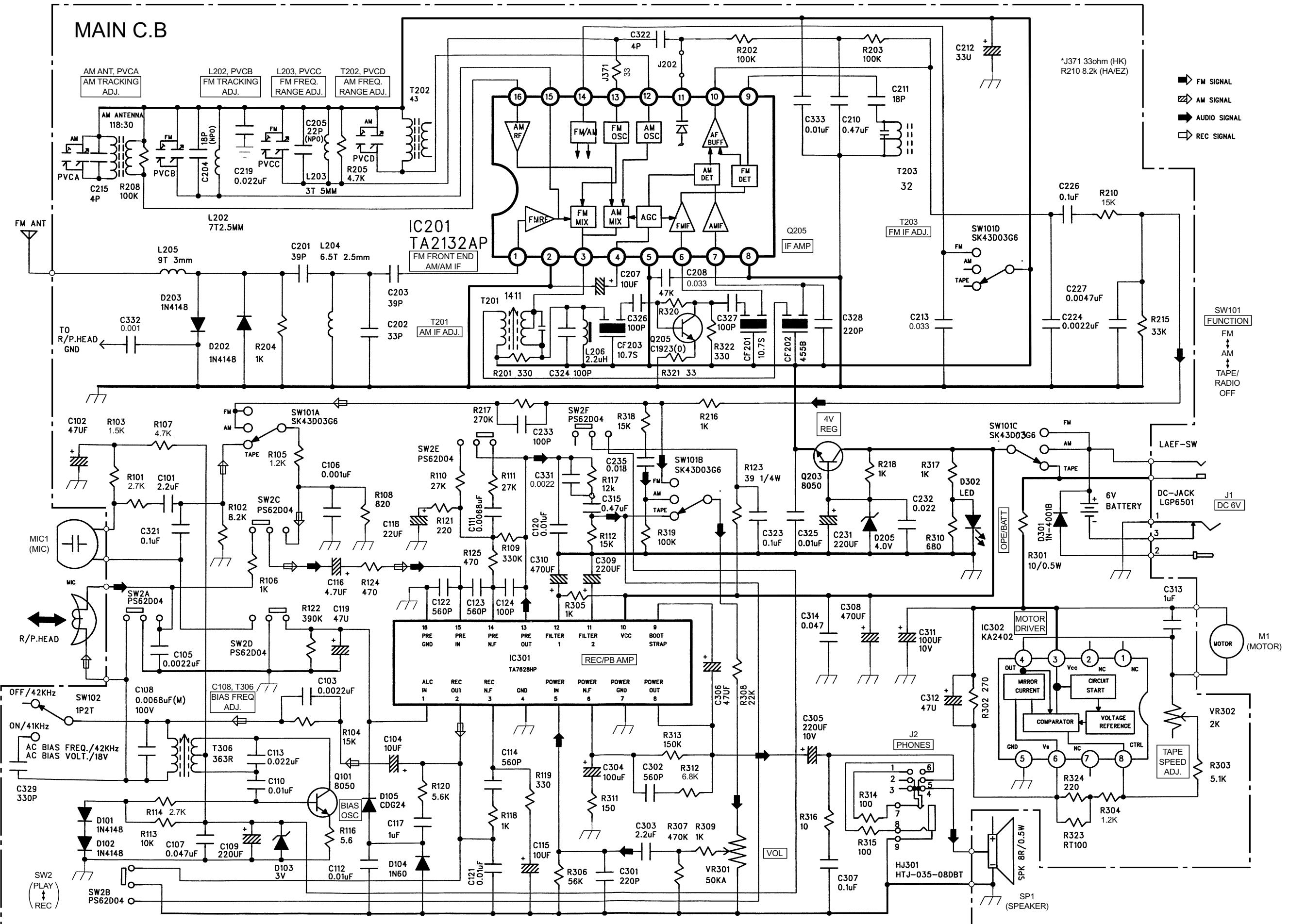
PIN'S NUMBER	1	2	3	4	5	6	7	8
PLAY	0	0	0	0	0.01	0.60	0	3.14
REC	0	2.76	0.79	0	0.01	0.61	0	3.02
PIN'S NUMBER	9	10	11	12	13	14	15	16
PLAY	6.12	6.47	6.42	5.47	1.49	1.39	1.39	0
REC	5.91	6.22	6.15	5.23	1.41	1.40	1.40	0

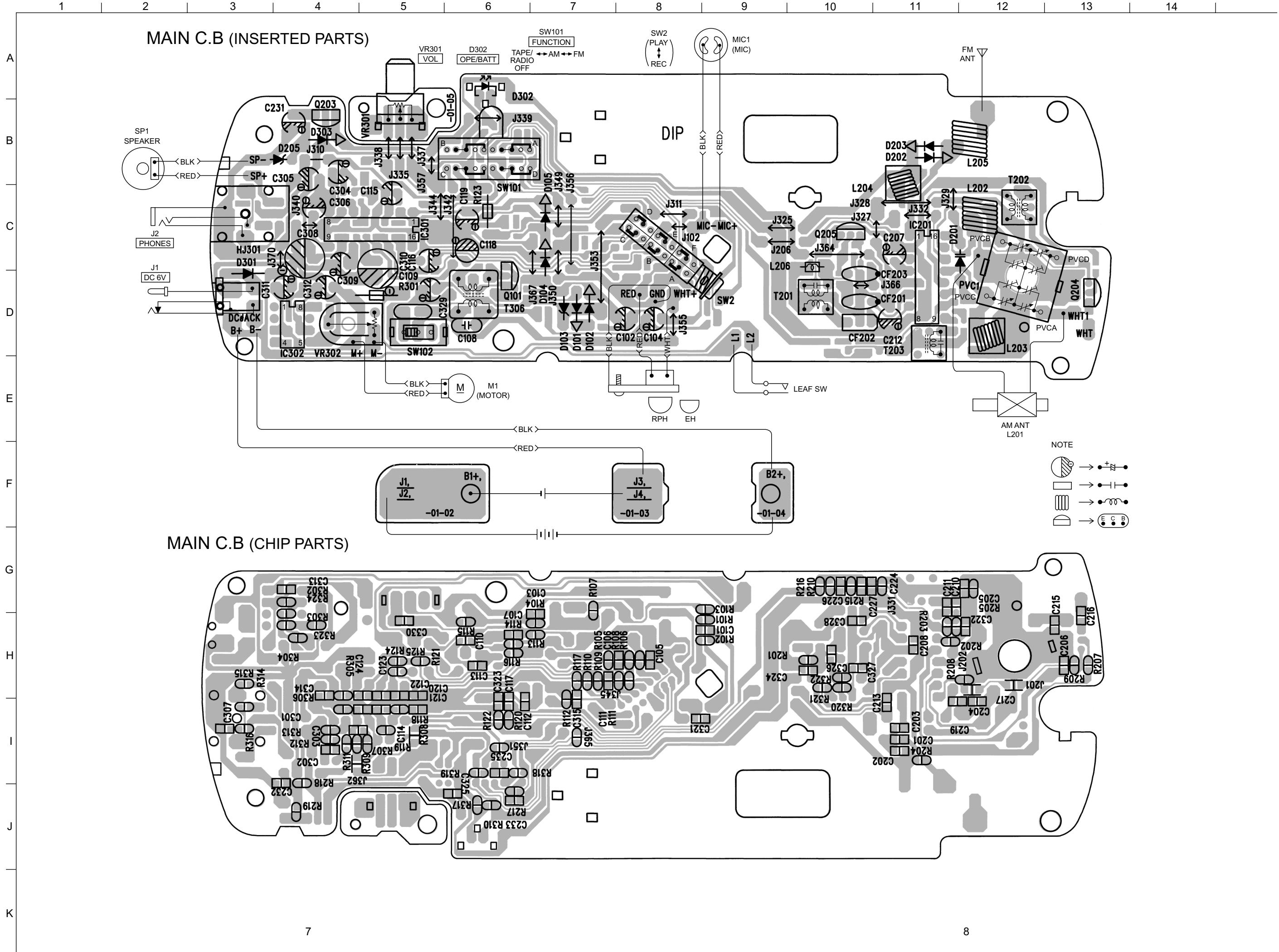
IC302 (KA2402)

PIN'S NUMBER	1	2	3	4	5	6	7	8
PLAY	/	/	5.59	3.91	0	5.05	/	4.91

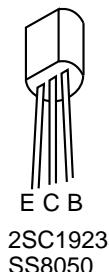
TRANSISTOR	Q203 (8050)		
	E	C	B
TAPE	2.93	6.42	3.55
RADIO	2.99	6.91	3.63

SCHEMATIC DIAGRAM





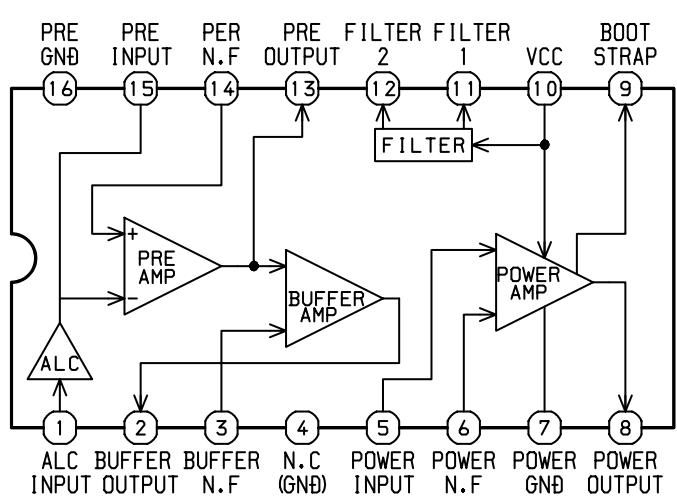
TRANSISTOR ILLUSTRATION



2SC1923
SS8050

IC BLOCK DIAGRAM

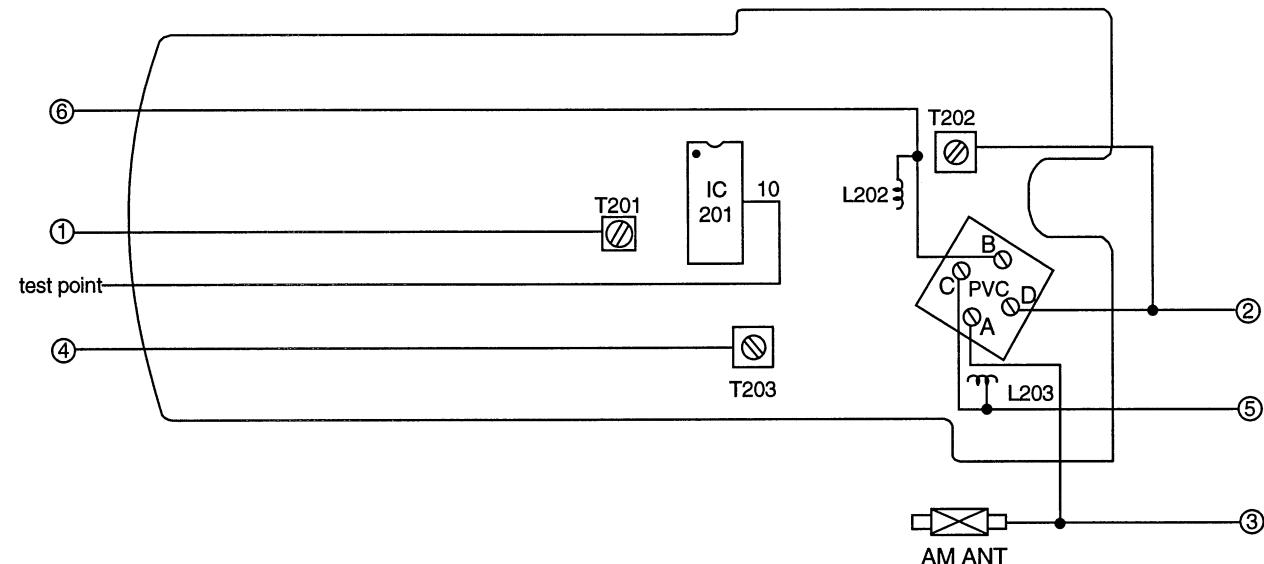
IC, TA7628HP



ELECTRICAL ADJUSTMENT

1. SET-UP PROCEDURES

TUNER SECTION



1. AM IF Adjustment

Test point: IC201 (TA2132P) 10 PIN
Adjustment Location: T201
T201 ----- 455 kHz

4. FM IF Adjustment

Test point: IC201 (TA2132P) 10 PIN
Adjustment Location: T203
T203 ----- 10.7 MHz

2. AM Frequency Range Adjustment

Test point: IC201 (TA2132P) 10 PIN
Adjustment Location: T202, PVCD
T201 ----- 517 kHz (D,U,LH Version)
515 kHz (EZ,K,HR,HC Version)
PVCD ----- 1650 kHz (K,HC Version)
1635 kHz (EZ,K,HR Version)
1750 kHz (U,LH Version)

5. FM Frequency Range Adjustment

Test point: IC201 (TA2132P) 10 PIN
Adjustment Location: L203, PVCC
L203 ----- 75 MHz (D Version)
87 MHz (U,HR,LH,HC Version)
87.3 MHz (EZ,K Version)
PVCC ----- 109 MHz (D,U,HR,LH,HC Version)
108.4 MHz (EZ,K,Version)

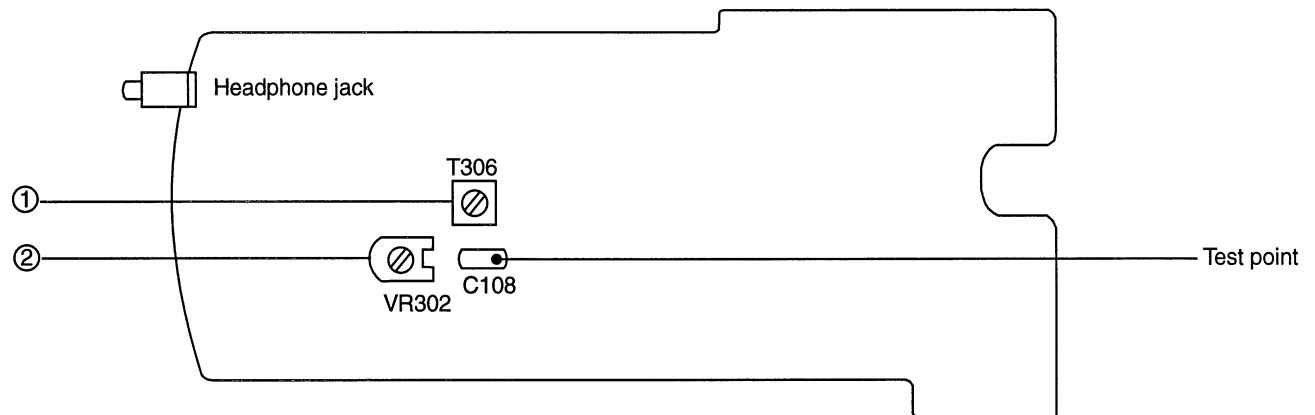
3. AM Tracking Adjustment

Test point: IC201 (TA2132P) 10 PIN
Adjustment Location: AM ANT.PVCA
AM ANT ----- 600 kHz waveform max.

6. FM Tracking Adjustment

Test point: IC201 (TA2132P) 10 PIN
Adjustment Location: L202, PVCB
L202 ----- 76 MHz (D Version)

CASSETTE SECTION



1. Bias Osc Adjustment

Test point: C108

Adjustment Location: T306

T306 ----- 60kHz ±5kHz

2. Tape Speed Adjustment

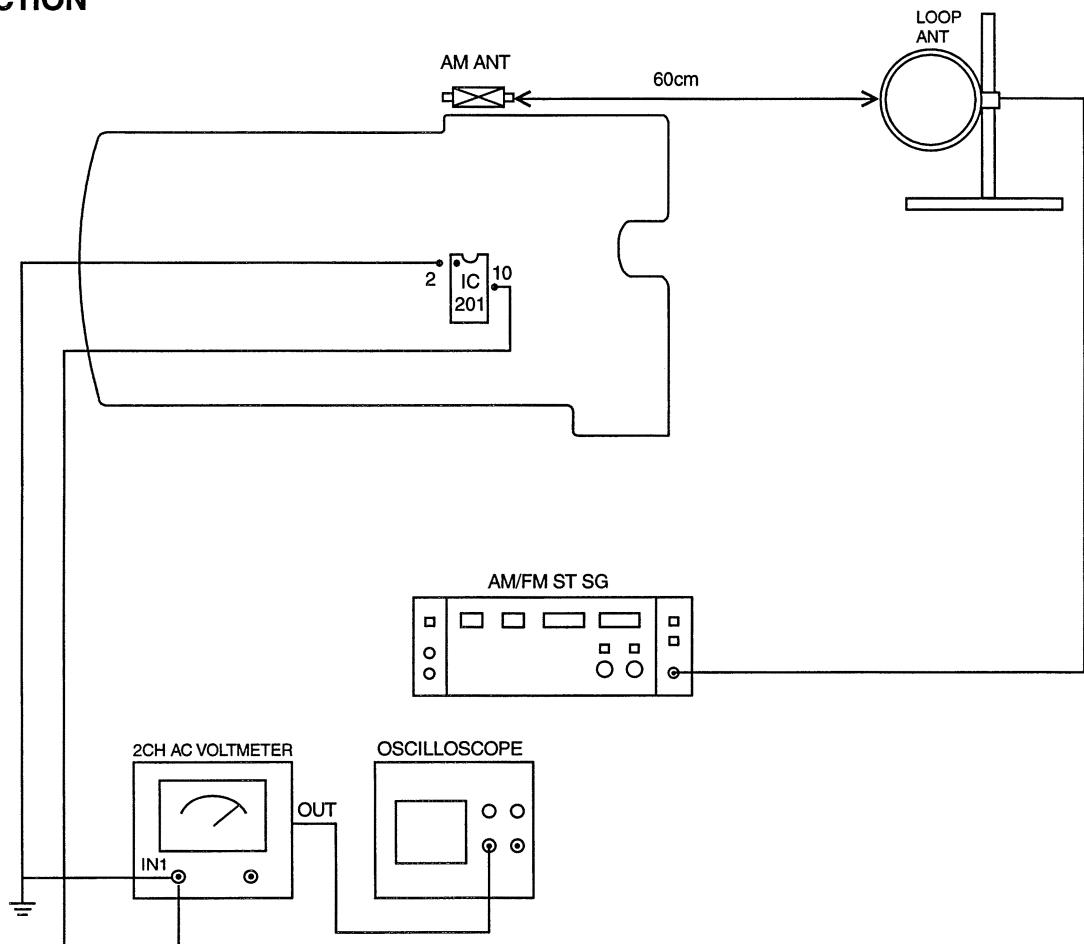
Test point: Headphone jack

Adjustment Location: VR302

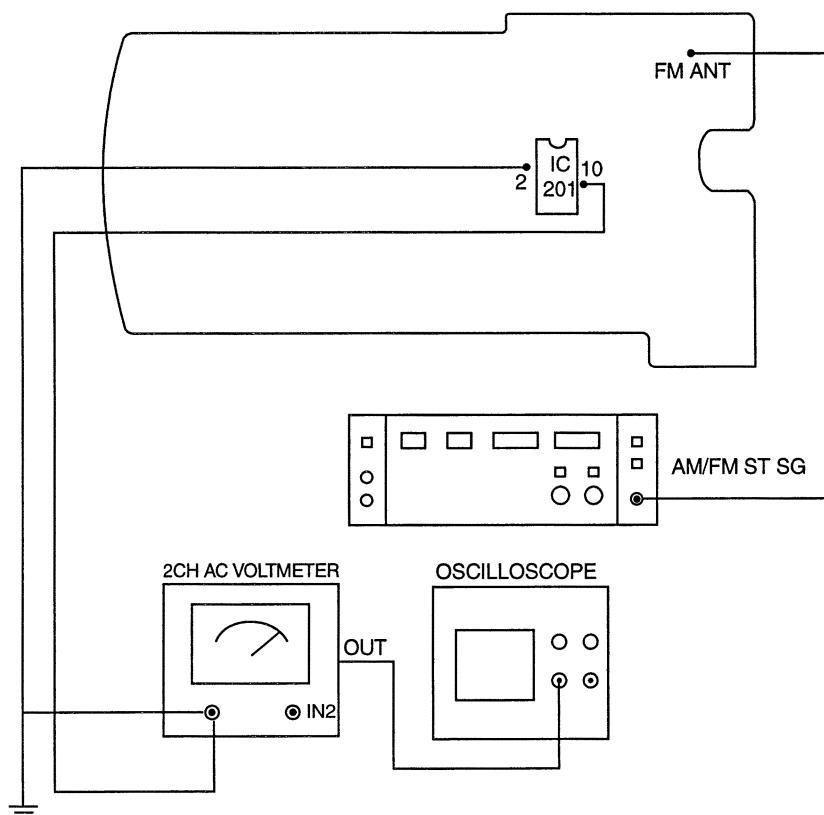
VR302 ----- 3000 ±90/-60Hz

2. EQUIPMENT CONNECTION DIAGRAM

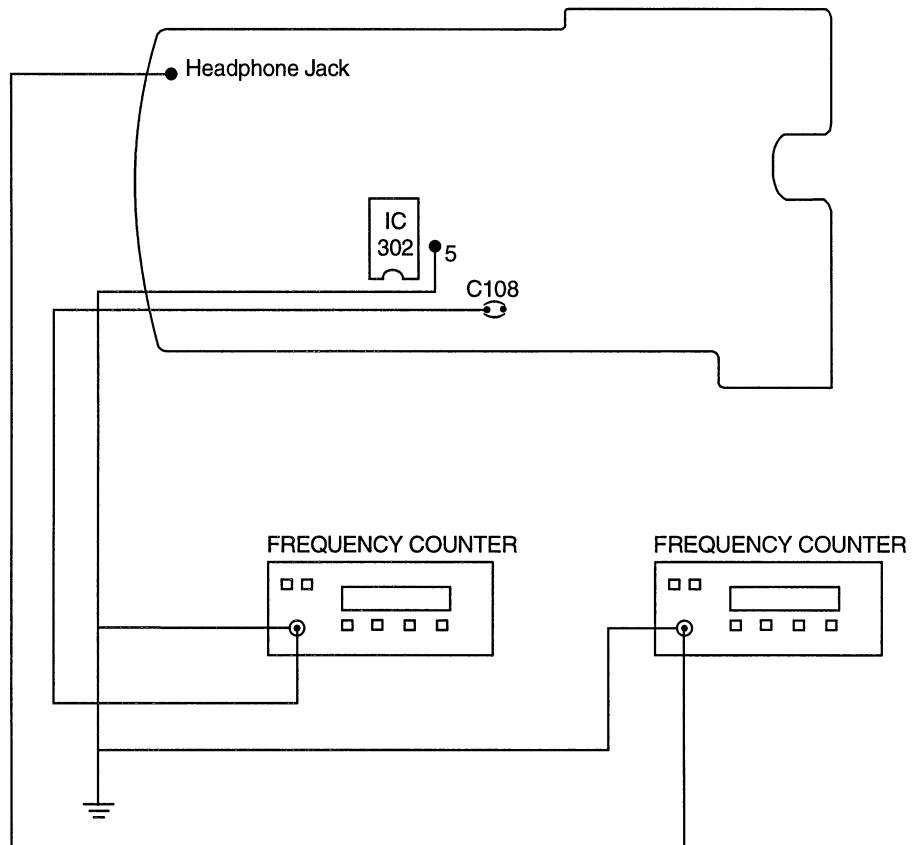
AM SECTION



FM SECTION



CASSETTE SECTION



PRACTICAL SERVICE FIGURE

< TUNER SECTION >

< FM SECTION >

Quieting sensitivity:
(THD 3%) Less than 20dB
(at 76/88MHz)
Less than 19dB
(at 92/98/108MHz)

Distortion: Less than 2% (Input 60dB)
(at 92/98MHz)

Intermediate frequency: 10.7MHz

< AM (MW) SECTION >

Sensitivity: Less than 51dB
(S/N 10dB) (at 600kHz)
Less than 49dB
(at 1000/1400kHz)

Signal to noise ratio: More than 30dB (Input 74dB)
(at 600/1000/1400kHz)

Distortion: Less than 3%
(100dB, 60% Mod)
(at 1000kHz)

Intermediate frequency: 455kHz

< DECK SECTION >

Tape speed: 3000Hz+90Hz/-60Hz
Distortion: Less than 3% (PB)
Less than 7% (REC)

Wow & Flutter: Less than 0.45%

Test tape: MTT-111N

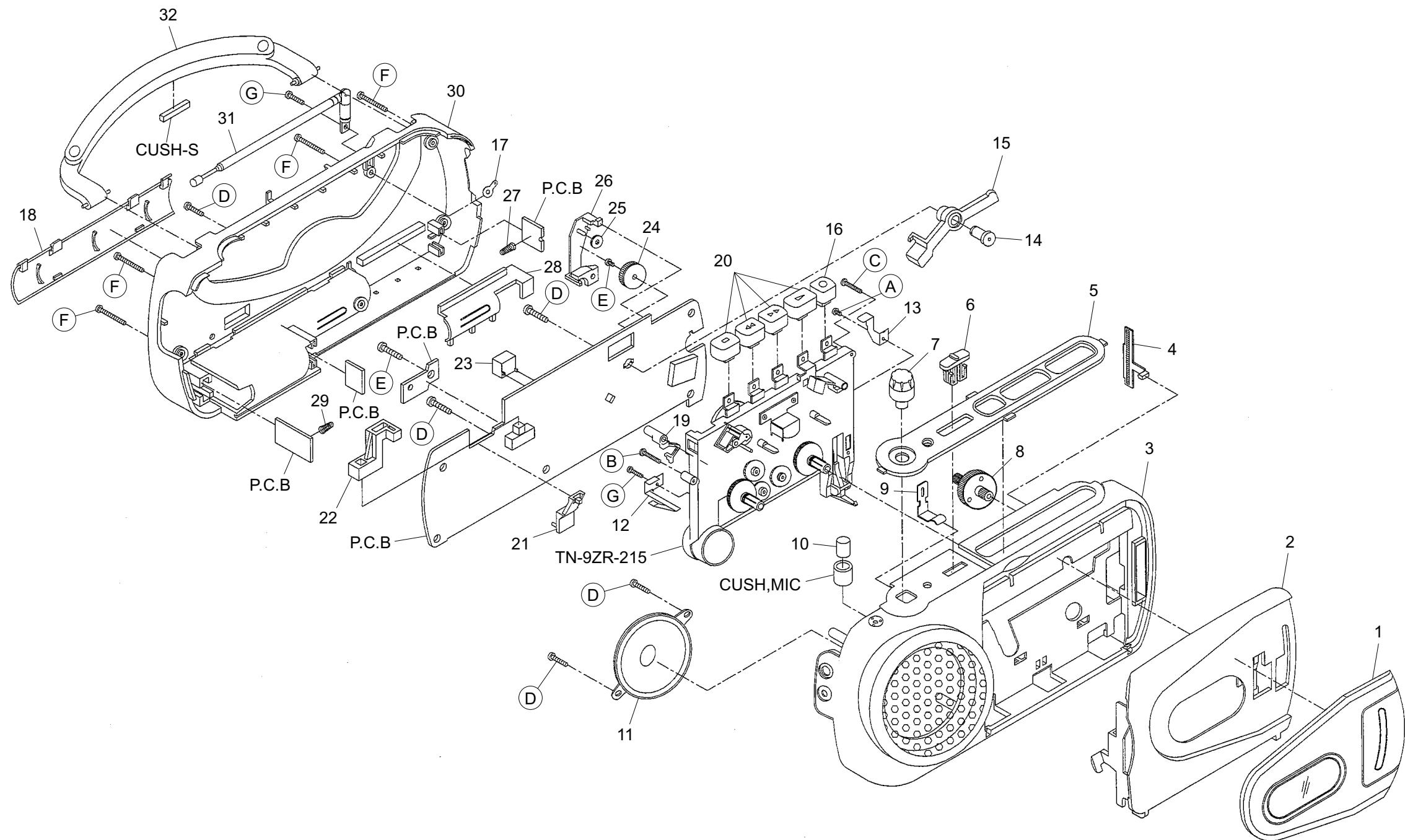
MECHANICAL PARTS LIST 1/1

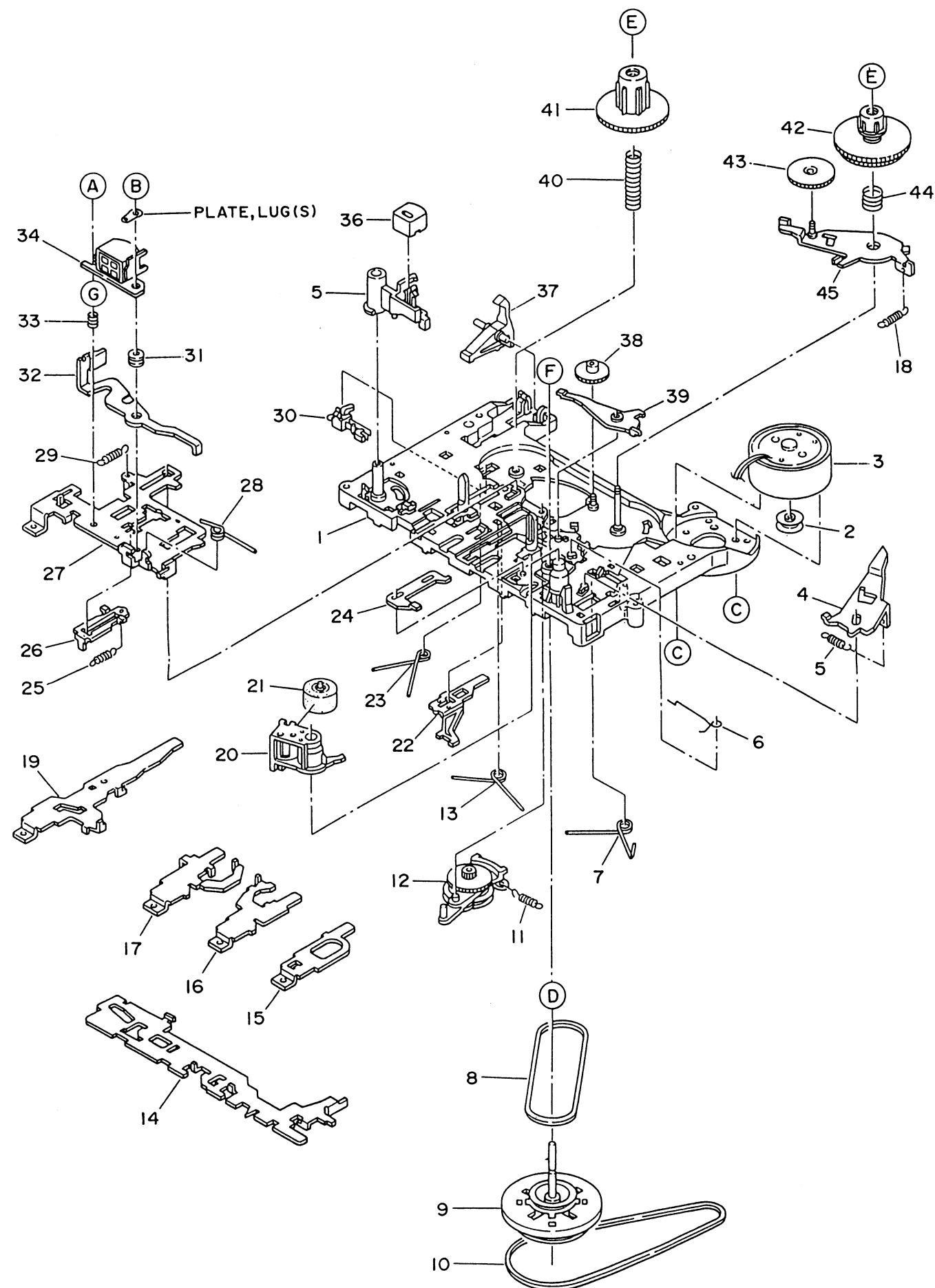
DESCRIPTIONで判断できない物は"REFERENCE NAME LIST"を参照してください。
If can't understand for Description please kinly refer to "REFERENCE NAME LIST".

REF. NO	PART NO.	KANRI NO.	DESCRIPTION	REF. NO	PART NO.	KANRI NO.	DESCRIPTION
1	8A-CM3-017-010		WINDOW,CASS EZ<AEESC>	24	8A-CM3-207-010		GEAR,VC
1	8A-CM3-018-010		WINDOW,CASS HR<AHRJSC, AHKJSC>	25	8A-CM3-208-010		GEAR,MIDDLE
1	8A-CM3-016-010		WINDOW,CASS U<AHASCC>	26	8A-CM3-206-010		CHAS,GEAR
2	8A-CM3-003-010		LID,CASS	27	88-CM2-211-010		SPR,BATT B(-)
3	8A-CM3-021-010		CABI,FR ASSY EX	28	8Z-CM3-203-010		BOX,BATTERY
4	8A-CM3-013-010		POINTER,	29	88-CM2-210-010		SPR,BATT A(-)
5	8A-CM3-019-110		LENS, TOP EX	30	8A-CM3-002-010		CABI,REAR
6	8A-CM3-010-010		KNOB,SL FUNCTION	31	86-CM3-609-010		ANT,ROD 350MM
7	8A-CM3-009-010		KNOB,RTRY VOL	32	8A-CM3-006-010		HANDL,
8	8A-CM3-008-010		KNOB,RTRY TUNING	A	87-267-527-310		SCREW, V+1.7-3
9	8A-CM3-211-010		SPR-P,CASS	B	8Z-CM3-208-010		UT2+1.7-10 W/O
10	88-CS8-625-010		MIC,ECM	C	87-B10-114-010		VT2+2-12 CR
11	86-CM3-605-010		SPKR, 0.5W 55M	D	87-741-095-410		UT2+3-8 GLD
12	8Z-CM3-211-010		SPR-P,DOOR CASS	E	87-255-073-410		U+2.6-6
13	86-CM3-213-010		SPR-P,REC	F	87-751-099-410		VT2+3-15 W/O SLOT
14	8A-CM3-201-010		SHAFT,REC	G	87-751-035-410		VT2+2-6W/0 SLOT
15	8A-CM3-202-010		LEVER,REC				
16	8A-CM3-012-010		KEY,CASS REC				
17	87-450-414-010		LUG TERMINAL PLATE, LB-4				
18	8A-CM3-007-010		LID,BATT				
19	8A-CM3-205-010		HLDR,PWB				
20	8A-CM3-011-010		KEY,CASS SET				
21	8A-CM3-203-010		HLDR,LED				
22	8A-CM3-204-010		HLDR,KNOB FUNC				
23	8A-CM3-209-010		HLDR,ANT				

COLOR NAME TABLE

Basic color symbol	Color	Basic color symbol	Color	Basic color symbol	Color
B	Black	C	Cream	D	Orange
G	Green	H	Gray	L	Blue
LT	Transparent Blue	N	Gold	P	Pink
R	Red	S	Silver	ST	Titan Silver
T	Brown	V	Violet	W	White
WT	Transparent White	Y	Yellow	YT	Transparent Yellow
LM	Metallic Blue	LL	Light Blue	GT	Transparent Green
LD	Dark Blue	DT	Transparent Orange		





REFERENCE NAME LIST

ELECTRICAL SECTION

DESCRIPTION	REFERENCE NAME
ANT	ANTENNAS
C-	CHIP
C-CAP	CAP, CHIP
C-CAP TN	CAP, CHIP TANTALUM
C-COIL	COIL, CHIP
C-DI	DIODE, CHIP
C-DIODE	DIODE, CHIP
C-FET	FET, CHIP
C-FOTR	FILTER, CHIP
C-JACK	JACK, CHIP
C-LED	LED, CHIP
C-RES	RES, CHIP
C-SFR	SFR, CHIP
C-SLIDE SW	SLIDE SWITCH, CHIP
C-SW	SWITCH, CHIP
C-TR	TRANSISTOR, CHIP
C-VR	VOLUME, CHIP
C-ZENER	ZENER, CHIP
CAP, CER	CAP, CERA-SOL
CAP, E	CAP, ELECT
CAP, M/F	CAP, FILM
CAP, TC	CAP, CERA-SOL
CAP, TC-U	CAP, CERA-SOL SS
CAP, TN	CAP, TANTALUM
CERA FIL	FILTER, CERAMIC
CF	FILTER, CERAMIC
DL	DELAY LINE
E/CAP	CAP, ELECT
FILT	FILTER
FLTR	FILTER
FUSE RES	RES, FUSE
MOT	MOTOR
P-DIODE	PHOTO DIODE
P-SNSR	PHOTO SENSER
P-TR	PHOTO TRANSISTOR
POLY VARI	VARIABLE CAPACITOR
PPCAP	CAP, PP
PT	POWER TRANSFORMER
PTR, RES	PTR, MELF
RC	REMOTE CONTROLLER
RES NF	RES, NON-FLAMMABLE
RESO	RESONATOR
SHLD	SHIELD
SOL	SOLENOID
SPKR	SPEAKER
SW, LVR	SWITCH, LEVER
SW, RTRY	SWITCH, ROTARY
SW, SL	SWITCH, SLIDE
TC CAP	CAP, CERA-SOL
THMS	THERMISTOR
TR	TRANSISTOR
TRIMMER	CAP, TRIMMER
TUN-CAP	VARIABLE CAPACITOR
VIB, CER	RESONATOR, CERAMIC
VIB, XTAL	RESONATOR, CRYSTAL
VR	VOLUME
ZENER	DIODE, ZENER

MECHANICAL SECTION

DESCRIPTION	REFERENCE NAME
ADHESIVE	SHEET ADHESIVE
AZ	AZIMUTH
BAR-ANT	BAR-ANTENNA
BAT	BATTERY
BATT	BATTERY
BRG	BEARING
BTN	BUTTON
CAB	CABINET
CASS	CASSETTE
CHAS	CHASSIS
CLR	COLLAR
CONT	CONTROL
CRSR	CURSOR
CU	CUSHION
CUSH	CUSHION
DIR	DIRECTION
DUBB	DUBBING
FL	FRONT LOADING
FLY-WHL	FLYWHEEL
FR	FRONT
FUN	FUNCTION
G-CU	G-CUSHION
HDL	HANDOL
HIMERON	CLOTH
HINGE, BAT	HINGE, BATTERY
HLDR	HOLDER
HT-SINK	HEAT SINK
IB	INSTRUCTION BOOKLET
IDLE	IDLER
IND, L-R	INDICATOR, L-R
KEY, CONT	KEY, CONTROL
KEY, PRGM	KEY, PROGRAM
KNOB, SL	KNOB, SLIDE
LBL	LABEL
LID, BATT	LID, BATTERY
LID, CASS	LID, CASSETTE
LVR	LEVER
P-SP	P-SPRING
PANEL, CONT	PANEL, CONTROL
PANEL, FR	PANEL, FRONT
PRGM	PROGRAM
PULLY, LOAD MO	PULLY, LOAD MOTOR
RBN	RIBBON
S-	SPECIAL
SEG	SEGMENT
SH	SHEET
SHLD-SH	SHIELD-SHEET
SL	SLIDE
SP	SPRING
SP-SCREW	SPECIAL-SCREW
SPACER, BAT	SPACER, BATTERY
SPR	SPRING
SPR-P	P-SPRING
SPR-PC-PUSH	P-SPRING, C-PUSH
T-SP	T-SPRING
TERM	TERMINAL
TRIG	TRIGGER
TUN	TUNING
VOL	VOLUME
W	WASHER
WHL	WHEEL
WORM-WHL	WORM-WHEEL



アイワ株式会社 〒110-8710 東京都台東区池之端1-2-11 ☎03(3827)3111 (代表)
AIWA CO.,LTD. 2-11, IKENOHATA 1-CHOME, TAITO-KU, TOKYO 110, JAPAN TEL:03 (3827) 3111